

AVIATION WEEK

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AUG. 29, 1949

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FOR THE AVIATION INDUSTRY

THE AVIATION WEEK

Outlook for Military Aviation — A Staff Report

WASHINGTON—

It is two years since the first waxy gleam of optimism was granted one just yet as policy by the President's Air Policy Commission and the Joint Congressional Air Policy Board. Two years ago these two groups provided a chart for the post-war world on which a second course for American aerospace was laid.

It is now time to look back over that chart and measure our progress against the course these groups so carefully mapped. The picture is not encouraging. Main concern of these policy groups was military aviation—the new first line of American defense—and it is that picture that is now the darkest.

The yardstick established by these policy groups called for top priority in the National Defense Department for aerospace with a budget of 78 billion Air Force money groups funded by a smaller World War II-era base and adequate Reserve and National Guard air groups. This force would require an annual aircraft production rate of about 55 million airplane pounds with about \$13 billion in new contract authority for aircraft procurement.

Thanks to strong bipartisan backing in both House and Senate, a good start was made in the program by the 80th Congress with record post-war appropriations for aerospace for fiscal 1949.

The Air Force was able to begin the buildup to 78 groups and reached a strength of 59 groups by Jan. 1, 1949. Naval Aviation was able to continue its modernization program aimed at striking enemy vessels with jet fighters and long-range attack planes.

However the program was slowed out even the strong opposition of President Truman and the Bureau of the Budget.

That opposition did not diminish after the President's sweeping political triumph last November. The 81st Congress was presented with a defense budget that gave \$15 billion into three equal slices for Air Force, Army and Navy. That budget cut the Air Force back to 46 combat groups; eliminated Naval aircraft modern funds, and cut military aircraft procurement back to \$2.5 billion and 34 million airplane pounds.

In addition the White House, represented by the Budget Bureau, has brought the 70-group Air Force authorization bill at every turn through its tortuous legislative path. When it was apparent that the bill's progress could not be stopped, Budget Bureau shifted tactics by eliminating the bill by eliminating its key provisions on aircraft procurement and combat strength.

Thanks to Adlai Stevenson (D., Ill.), powerful chairman of the House Armed Services Committee, the attempt to curtail the foundation of American aerospace has not gone unchallenged. Vinton led the House in open revolt against the President's proposed budget, adding \$600 million, largely for procurement, to his program for fiscal 1951 up to \$14 billion and 55 million airplane pounds. The would give the Air Force 57 combat groups and begin to approach the \$5.3 billion and 61 million airplane pounds authorized set by the air policy studies as a minimum program for national security. The President's reference is apparently stronger in the Senate where it appears likely that a cut in the House program budget will be voted.

However, Vinton has not given up the fight. Repeatedly during the House Armed Services Committee investigation of the R-3

Vinson has charged the aerospace advocates with his unswerving determination to "have another shot at that RIF and reduce the \$500 million cut anticipated from the Senate. AVIATION WEEK has carried the key members of the House House committee and can report that Vinton's strategy to reduce the cut a second and has an excellent chance to succeed. If he is successful, not only the Air Force and aircraft industry will owe him and his aids a tremendous vote of thanks but also the people of the United States, whose security and future depend on how well our air policy is implemented.

But the fight will not be over with the fiscal 1951 budget. Already American War has launched further efforts in support of the fiscal 1951 budget war in preparation by the National Defense Department. This is the budget that will not officially see the light of day before Congress has another its conflict. It is apparent now that President Truman is still determined to cut back the Air Force to 46 groups and force another struggle as Capital Hill to see that our first line of defense gets first priority in the defense budget.

After six strenuous efforts to stem its rise before the air policy groups of two years ago, the aircraft industry has relaxed, confident that its battle for aerospace would be over and won. This is clearly not true in the events of the past year clearly indicate. It is clearly evident that the industry must wake up to the fact that many of the key points advocated by the policy groups are still languishing for lack of proper support.

It is obvious that, despite volumes of eloquent testimony to the contrary by men speaking out of their hearts in support in the last war, the concrete needs of the government is still not understood of the needs need for going against the top priority in the defense structure.

It is clear now that an adequate Air Force is needed during the next 50 years, it must be ordered now. It seems clear that a policy that looks aerospace appropriations every time the Russian pressure is applied and delays them every time the Kremlin desires to relax will produce a demoralized and poorly trained Air Force and thus in the aircraft industry upon which it is dependent for modern equipment.

It is clear to keen industry observers here that you cannot meet an emergency like the Berlin crisis with apparatus of transports on order and that you cannot meet an international crisis with infra-structural state borders that are as slow as the drawing board instead of on the flight line, manned by trained crews.

Unless the first line of defense is manned and ready, the second and third lines are useless. This is the lesson that the Truman administration and its file-economy mandated experts have not yet learned.

As Secretary Stengren has aptly stated that aerospace is everybody's business. More was in the way of Washington was that it is up to the aircraft industry to make this country up to what is happening to our first line of defense. It must be made clear that it is not just the question of an industry looking for government contracts, but the real concern of every one of the 140 million Americans whose safety and future can be insured only under a cloud of an emergency.

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MICRO precision switches have long fulfilled the rigid "AN" requirements for aircraft design. Their positive, dependable performance combines with utmost economy of size and weight. Pictured here are a few of these switches, housings and actuators which MICRO SWITCH has built to conform to Army-Navy aeronaufical specifications. For complete information call your nearest MICRO SWITCH branch office or sales representative.

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- 6 "P" plunger blade switch (MICRO 82-7852). Conforms to AN3215-1.
- 7 Pin plunger blade switch (MICRO 82-831). Conforms to AN3210-1.
- 8 Pin plungers, split contact blade switch (MICRO 82-311). Conforms to AN3214-1.
- 9 Lever arm actuator bracket (MICRO 9-1574388).

- 10 Small, high capacity switch (MICRO V3-1). Conforms to AN3234-1.
- 11 Actuator bracket (MICRO 82G731A). Conforms to AN3165-1. Designed for use with blade switch (MICRO 82-831) which conforms to AN3210-1.
- 12 Actuator bracket (MICRO 82C711E). Designed to conform to AN3146-1. For use with blade switch (MICRO 82-831) which conforms to AN3210-1.
- 13 Actuator bracket (MICRO 82C711E). Conforms to AN3167-1. For use with blade switch (MICRO 82-831) which conforms to AN3210-1.
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WHO'S WHERE

Wilson Resigns from AIA

Public controversy between the Air Force and Navy lately will get a new and well-adjusted view from the fall with publication of the autobiography of Eugene E. Wilson, who has resigned as chairman of the board of governors of the Aircraft Industries Association to be in line to resign his own job as president of the industry.

Wilson, former Naval officer and marine president of United Aircraft Corp., served as AIA chairman since 1945. He points out that the "army forces have been more by far uncontrolled figures" while the industry has been held in check by the military. He also notes that the industry has been held in check by the military.

Wilson resigned because he feels "Shoreline" "ought not to place all its eggs in the same basket."

Wilson long has been one of the industry's prominent spokesmen and in his latest resignation expressed the belief "that the best interests of the aviation industry will be served by my resignation." No action has been taken on his resignation, but probably will be elected at the next AIA board meeting in December.

In the Front Office

In one of a number of important aviation executive changes, Charles E. Galla has been elected president of Air Research Industries Inc. He was formerly vice president of TWA and general sales manager of TWA.

J. Kenneth Hall is the new president of Lockheed Aircraft Services, Inc., succeeding Cyril Chappard, who continues as chairman of the board. Hall's old post of vice president and general manager has been discontinued. Max Ward, Lockheed spokesman, was elected to the board.

Thomas E. Meade has been made vice president in charge of domestic sales for Tenth Tent Co., Los Angeles. He's been with Meade since 1944, since Meade's company was founded.

Victor E. Brundage has resigned as vice president and director of foreign sales at Douglas Aircraft Co. A longtime executive at Douglas, Brundage resigned as a vice president in 1944, to work with the Air Force in World War II. He came out of the war as a major general.

L. M. Ladden, known as engineering at General, has been elected to the board of Messersmith Co., along with Charles T. Lough, another retired General. Ladden will be a director of General, and Lough will be the vice president for Sales.

Kenneth F. Bowen has been named assistant vice president of Northrup Aircraft, Inc. Working in the office of B. G. Reed, vice president, he will assist in planning and supervising production of the F-89 Scorpion and C-124 Raider. Lough's general manager, S. W. Williams, has been elected vice president of AVCO Mfg. Corp., the parent company of the engine-building division which now is known as the Loughman-Spencer division.

INDUSTRY OBSERVER

(This week's column is devoted to the observation of an Aviation Week editor who traveled with the House Armed Services Subcommittee during its trip to the West Coast to take testimony on the B-36 controversy.)

Donald Douglas, president of Douglas Aircraft Co., can be credited with a large share of the House Armed Services Subcommittee's move to make constructive recommendations for improvement of the B-36. Douglas was labeled Douglas as one of the discredited manufacturers during the USAF procurement process. Committee Chairman Joseph H. Kenna had a long personal score with Douglas in Santa Monica looking to discontinue the making of Douglas' proposed planes. Douglas convinced Kenna that the B-36 program had been the one that was the most profitable for the industry and that the B-36 was the one that was the most profitable for the industry. Kenna and committee members now feel that one of the constructive jobs the Armed Services Committee can do is a result of the B-36 investigation. It is recommended that congressional action to insure a stable, technically superior and sufficiently large aircraft industry operated by private enterprise.

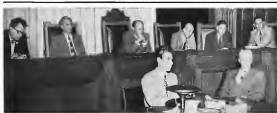
Northrup Aircraft, Inc., hopes to produce an intermediate-range bomber version of the Flying Wing. J. K. Northrup told the House Subcommittee that the present structure of the B-47 jet Flying Wing tested to the Northrup technology (Northrup engine) is expected to produce a 10,000 sq. ft. bomber capable of carrying 10,000 lb. bomb load. Northrup did not specifically state that the version of the Flying Wing would be faster than the B-36 with jet pods, but implied that he expected it to outpace the latest B-36 development. Experimental prototype of the turboprop engine has been completed. Final version of this turboprop is expected to produce about 10,000 hp.

Charles A. Lindbergh, consultant for United Aircraft Corp. and USAF, was credited by several USAF committee staff. H. H. (Hap) Arnold said regarding the B-36 Army Air Corps modification program aimed at making U.S. aircraft combat worthy.

Arnold told AVIATION WEEK at San Francisco recently that this program was begun in 1978 shortly after Lindbergh had finished the Air Corps with its first extensive data on the combat capabilities of European aircraft. The aircraft modification program, which grew to considerable proportions during the war, was begun along the line suggested by Lindbergh's data which indicated European superiority, particularly in fighter planes.

Gen. Arnold added an interesting footnote to aviation history with his description of the first and only time he overruled Air Materiel Command's recommendations on aircraft procurement. Arnold told the Armed Services Subcommittee in San Francisco that while he said Gen. Carl A. Spaatz never visited the North American plant at Inglewood, Calif., in 1948 they saw a production line of NA-72 fighters being built for the British who asked them to build them.

Spaatz who was then preparing to organize the 1st Air Force in England, told Arnold: "That's the place I want." AMC had turned the plane down. Arnold told Spaatz: "If that's what you really want you've got it." He overruled AMC and ordered North American to produce an American version of the Apache which became the Mustang (F3H) generally considered to be the best informed fighter of World War II. Arnold told the subcommittee: "I was never sorry for that decision."



ROBERT K. NORTHROP (seated right) talks of merger at LA hearing held by House. Wolfe, Brown, Foss, Anderson, Johnson and Northrop.

Industry Leaders Tell Merger Plan Details

Symington not mentioned in negotiations,
West Coast officials inform B-36 probers.

By Robert Holt

LOS ANGELES—Listeners by air to two West Coast aircraft industry executives fully reconstructed "high noon," and in Congress by Rep. James Van Zandt (R., Pa.) regarding alleged plots of Air Secretary W. Stuart Symington to lead a gigantic aircraft combine (reported to be created through political, financial merger).

The transcript, compiled in the California State Building before a subcommittee of the House Aeronautics Committee headed by Rep. Melvin Price (D., Ill.) and was cross-examined by the committee's special counsel Joseph Keenan.

The House subcommittee, a investigating charges of irregularity in U. S. Air Force procurement of the Convair B-36 intercontinental bomber, contained in a nine-page memorandum letter circulated in Congress and a speech made by Van Zandt on the House floor last Nov. 27.

Attendees listed who testified at the hearing were:

- William M. Allen, president of Boeing Airplane Co.
- Donald Douglas, president and chairman of the board of Douglas Aircraft Co.
- Oliver P. Echols, chairman of the

- board of Northrop Aviation Inc.
- Robert Gross, president of Lockheed Aircraft Corp.
- J. H. (Dick) Knudsen, president of North American Aviation, Inc.
- J. K. Northrop, president of Northrop Aviation Inc.

They spoke on June 14, 1949, most read by the subcommittee.

• Symington was never mentioned in all of the numerous post-war aircraft merger discussions in a possibility to lead one of the proposed merger combine.

• The proposed merger were mostly business deals in which neither company has not the Air Force figured in the negotiations.

• Technical competition makes the up and down of industrial aircraft com-

Letter Writer Revealed

Colene Worth, special assistant to Navy undersecretary Dan A. Knudsen, last week informed that he was the author of the "anonymous letter" which led to the B-36 investigation.

Worth, called to testify before the committee by Chairman Carl Vinson (D., Va.), and he gave one copy of the "memorandum" to Rep. C. B. Dwyer (D., N. C.) and another copy to Gloria L. Martin, Baltimore, aircraft manufacturer. Martin was one of his sources of information for the memorandum, he testified. Martin, he said, printed up his copy of the memorandum to Sen. Millican Tydings (D., Md.), chairman of the Senate Aeronautics Committee.

Some information used in preparation of the document, Worth told, came from two Navy officers, James Ingram of the Office of Naval Operations and Capt. Tom Daves, pilot of the transport Tuffie (PTV) on its 13,279 mi. second flight from Australia to China.

The anonymous document was also delivered to Rep. James Van Zandt (R., Pa.) by Worth during a conference in the Capitol grounds. Worth testified that he had told Don Knudsen, Navy undersecretary, about five days before testifying that he had written the anonymous document. Worth also said he had talked with Harold Moser about the document. Moser is the Washington representative of the Glenn L. Martin Co. Worth said Glenn L. Martin had previously requested a copy of the memorandum.



KINZELBERGER wouldn't merge.



DOUGLAS won't start in, and...



GROSS would cover his only 20 percent.



HAF ARNOLD: Country should push with push to the B-36



ALLEN: Being had no samples of top management personnel

panies extremely busy but avoid USAF procurement policies are generally lay and there is no evidence of political influence or interference in major air frame and engine contract awards.

• Strong maintenance of the integrity of the USAF High Command with particular emphasis on the unshakable independence of Gen. George Churchill-Knox.

• Wolfe testimony: The story also heard from Col. Frank C. Wolfe, retired, Wright Field aircraft laboratory chief, and brother of Air Materiel Command's procurement chief Maj. Gen. E. B. Wolfe. The anonymous letter charged that Col. Wolfe had conspired a contract with Emerson Electric Co. on defective aircraft gas turbine that has cost a \$20 million loss for the company.

Symington was formerly president of Emerson, before entering government service in 1949.

Col. Wolfe testified that he had been paid between \$15,000 and \$20,000 by Emerson Electric Co. during

1944 and 1945 as an assistant consultant after his retirement from the Air Force in Nov. 1944 for physical disability caused by heart disease. He said he had arranged his employment by Emerson with Symington, then first president and then chief Executive Officer. Wolfe said he had similar arrangements with other wartime aircraft assembly manufacturers and that all these consulting deals, including Emerson Electric, were concluded at the end of the war.

• No Ranges: He testified that he had never seen any contract authorization for the Air Force, and the AF obviously had not investigated Emerson Electric Co. contract contract. Wolfe said he now had 300 own firm in Los Angeles that did sub-contracting and consulting work for major defense manufacturers specializing in gas turbine, sailing, components and leading gear components.

The anonymous letter also charged that Wolfe was living in a house at

146 S. McCarty Dr. in Beverly Hills that was a bargain at \$55,000. Wolfe said he paid \$10 a month on the deal for a six-room apartment at that address and had lately owned the building in a swap with a retired Navy captain based for a \$15,000 ranch Wolfe owned near San Diego. Wolfe said the temporary swap was arranged to provide him with a place to live in Los Angeles. He said he bought the San Diego ranch land for \$2400 and had put in about \$35,000 in improvements including an orchard house.

• How Arnold—After hearing Gen. H. H. Arnold, retired USAF commander in San Francisco, the committee returned hearings in Washington only last week, quizzing individual members of the USAF Senior Officers Board—Gen. Mark F. Arnold, Gen. Joseph T. McNamara, Lt. Gen. Louis Norstad, and Lt. Gen. H. A. (Freddy) Craig. Individual anonymous members indicated they no longer had any doubt of the falsity of the charges against

Spanglow and USAF procurement policies

Recent committee plans indicate it will follow the advice given by Gen. Ainsworth and others to evaluate the roles of the Army, Air Force and Navy in the national defense structure. Ainsworth seemed to leave no doubt in the Joint Chiefs of Staff's view Congress may have to decide 305 days in time to deliver each of its tools over JCS functions. This will permit the investigation to end up with the identification of the major roles of each service.

► **Pattern World-Wide**—West Coast manufacturers testifying on proposed aircraft program mergers painted a grim picture in which Curtiss-Wright-Goss was constantly trying to find a willing partner with which to combine. So principal strategic negotiations were outlined. They were:

► **North American-Curtiss**, North American president Knudsen told subcommittee. He had been approached by Field Office in March 1945, regarding a possible merger with Curtiss.

"My answer was no," Knudsen told the subcommittee. "There was no further discussion. Spanglow was not mentioned. I was given to understand I would head the merged firm."

► **Northrup-Goss**. Oliver P. Eshels, chief of USAF cargo group who now heads the Northrup board, testified last fall that the proposed Northrup-Goss merger came from Spanglow as of August, 1946. Eshels said he told Spanglow and USAF undersecretary Arthur Rumsfeld that he was offering an offer from Northrup. Spanglow asked if Eshels had talked to Orlin and suggested that since he had, it "could be interesting."

Eshels then had a three-hour talk with Orlin regarding the proposed merger. Orlin said he had made Northrup a merger offer because of the B-49 jet flying wing production program then scheduled for the new airfield plant operated by Goss at Ft. Worth.

"Orlin and he thought it was better not to have any compromise in one place and that it was better to merge," Eshels testified.

► **Talk To Orlin**—Orlin testified that Eshels told the merger over with John Northrup if he were seriously considering going with Northrup's firm and that Eshels would head the Northrup-Goss combine. Eshels said he was in a position to offer advice first stage at that time he had no money in either firm. He said he believed that the decision he reached without him.

Shortly thereafter the Northrup board of directors voted against the merger. Much later (April, 1949) the

B-49 production contract was cancelled and, according to Eshels, the event meant for the merger ceased to exist. Northrup's attorney, J. Northrup testified that the subcontracting of B-49 production was not bound to last in June 1948, in a letter from AMIC head, Gen. McNair who pointed out that the Northrup-Hawthorne, Calif., plant was not subcontracting as large quantities of jet flying wings then subcontracted for the future bomb 230-1 (McNair) wrote that USAF would consider methods by which to prevent cancellation of Goss plant at Ft. Worth could be used.

Northrup said that he had planned to build three B-49 per month at Hawthorne, and when USAF indicated it might want to turn out 15 per month at Ft. Worth, he said that other plant facilities would be needed.

► **Meeting Holt-AMC** indicated it was up to Northrup and Goss to meet out a method for producing B-49s at Ft. Worth. Goss suggested a joint meeting for that purpose. They were held in Los Angeles July 15, 1945, with Orlin, John Northrup, LeMotte T. Coker, Goss, president of the subcommittee, and other members: Richard Miller, Northrup board chairman, Spanglow, and Gen. McNair and K. B. Wolfe present.

Agreement was reached that the best solution would be Northrup to subcontract part of B-49 production to Goss at Ft. Worth. John Northrup said it was not an ideal solution from his point of view but "the best under the circumstances, and most necessary." Arthur Rumsfeld, Northrup negotiated profit distribution on the B-49 without USAF intervention. This was to build the first two of the original order of 10 B-49s at Hawthorne and two at Northrup at Ft. Worth.

► **Some Pressure**—No company gladly gives up the manufacture of its own product. John Northrup told the subcommittee, "That it was a logical solution to a difficult problem. Obviously there was some pressure on Northrup that it was not in any sense imposed."

John Northrup testified that he and Orlin were still good friends and that Orlin was still in the Air Force. Northrup was in the Air Force when it was proposed 10 years ago but later withdrew from control. He and Spanglow were never associated at the head of the Northrup-Goss combine.

John Northrup's Wright, Boeing president Allen testified that he was approached in Nov. 1946 regarding a proposed merger of Boeing and Curtiss-Wright Corp. Wright then C-W board chairman, said Allen would not have said and asked him if he would see Paul Shultz, a C-W director and New York State. Allen said Shultz came to Seattle and they discussed the possibility of a Curtiss-Boeing merger.

"I told Shultz I didn't look at the proposed deal," Allen told the subcommittee. "Shultz said it was Curtiss-Wright, not Boeing, and I was not a personal person. I told him I had no surplus of top management at Boeing and I did not favor shunt management. I also gave him the business reason for not having an airframe firm with one whose primary product was engines."

► **Allen to Holt**—Allen and Shultz indicated that he (Allen) would head the proposed combine and that Spanglow was never discussed for any part with either firm. Allen said he suggested Shultz talk to Douglas as Knudsen if he was interested in combining with another existing manufacturing firm. Shultz came to the Shultz-Allen talks. Lockheed-Curtiss-Wright, Robert J. Goss, president of Lockheed Aircraft Corp. testified that he was approached by Goss, Wright, president of Curtiss-Wright Corp. who suggested the end of the war in 1945 relative to a merger of the two firms.

Goss said he investigated the possibilities but rejected the proposal largely because of the complicated capital structure of Curtiss-Wright, particularly the problem and rights of the Curtiss stock in liquidation and sale. Shultz took part in these negotiations.

Goss said he concluded the merger was undesirable and that Spanglow was withdrawing from it. He said Spanglow was never mentioned for a part in the merged group. Goss said it was understood that he would head the combine.

► **Lockheed-Goss**. Goss also testified to detail the series of negotiations between Lockheed and two different versions of Goss regarding merger.

First overtures were made in the spring of 1946 by the American Corp. headed by Victor Kammel. AVCO owned about 10 percent of Goss's stock and Kammel was president of the corporation. AVCO approached Goss with a proposition that Lockheed take over its interest in Goss. Goss said he made a detailed exploration of that offer. He said that he never gave it to Curtiss, AVCO president, and John Holt, in AVCO director. Orlin did not figure in these discussions and Goss did not know him at that time. ► **Meeting Abandoned**—During the summer of 1946 the merger was proceeding favorably when it was suddenly abandoned. This was due to three factors, according to Goss.

► **Performance**—indication that the U. S. military might not want the merger because it was not too profitable. ► **Both company's securities were fluctuating in an "unpredictable" manner**

making the merger financially unfeasible.

► **Convincing** had gone double in the eventual survival of Lockheed because of the position of the Curtiss-Wright group by the CAB.

► **Finally Business**—Goss said the proposed merger was a purely business deal and had nothing to do with politics. When the business began to look unfavorable the merger was abandoned.

In Sept. 1948 about three months after USAF had decided to continue the B-49 production program Orlin approached Goss with an offer to sell his stock in Curtiss, the Lockheed president related.

Congressional Roundup

70-Group Plan Nearer Approval

Senate, House committees press action on important military aviation measures; civil bill passes.

Some key aviation measures are progressing rapidly through Congress by Senate and House. The Senate:

► **70-Group USAF Authorization**—Legislation setting an authorized strength for the Air Force of 532,000 personnel and 200,000 aircraft (225,000 aircraft total), necessary to sustain a 70-group program, has been approved by the Senate Armed Services Committee, where it was studied last month. The committee made four changes in the House-approved bill. ► **It modified the 70-group program**, but deleted language specifying a "700" group and "700" aircraft separate. ► **It quadrupled** authorized by 61 "military group." Senate committee said there should be no limit on the USAF.

► **It struck out a provision authorizing the purchase of 5300 new planes** annually, explaining that procurement should be determined on a year-to-year basis by the congressional appropriations committee. ► **It authorized** all would permit procurement funds to remain available for obligation over the four years succeeding the year for which they were appropriated. ► **It authorized** and development, including equipment, and public works would remain available until expended. ► **Reduction** authorized new aircraft should officers from 72,000 to 72,400.

► **Barred** the Air Force's own funds for prototype aircraft formerly designed for commercial use.

► **Other**—Other-Goss said he did not pursue these discussions because he would never buy "only 20 percent of anything" and did not consider that the position of the Curtiss-Wright group by the CAB. Goss said the proportion was that Orlin and Allen Goss wanted to get out of Curtiss and that Goss would take over their interest and control of Curtiss. Again Spanglow was not mentioned in the discussions.

Goss testified he owned 30,000 shares of Lockheed stock, 25,000 shares of Curtiss stock, and over half owned 100 shares of Curtiss stock which he had sold.

► **No Douglas-McGraw**—Donald Douglas testified he had never been approached by anybody regarding a merger with Douglas Aircraft Co. But that he had been approached by a number of producers whose discussions in the industry.

► **Gen. H. H. Arnold** told the subcommittee that he had personally considered Spanglow's plan when he headed the USAF. He said it was not in line with the B-36 production program.

► **Five Plans**—The B-36 is a five airplane and the country should be proud of it, he said. "The other country in the world has a bomber that can carry with it in range, bomb load and speed."

► **Lab. Demarc**, N. E. astronomical aircraft industry \$7 million.

► **Goodell**—Military Test Range—House Appropriations Committee has approved \$5 million to start construction on a 3000-acre range called the testing center, based at Cape Canaveral, Fla., and extending into the Atlantic, with control facilities in the Bahamas.

The committee has also authorized the Secretary of Defense to transfer (from whatever funds may be available) \$5 million additional for the project and \$2.5 million to sustain the Boeing production (B-49) authorized capital. The limited area of the White Sands, N. Mex., is inadequate for long-range testing but will be ready for testing by the end of the year according to USAF. Total cost of the Florida center, originally estimated at \$75 million, now set at \$75 million.

► **Air Star Routes**—Congress has approved and sent to the White House legislation authorizing the Post Office Department to contract for an air mail service between Washington and the West Coast. The department plans to integrate services (for transport of all classes of mail) in the Puget Sound and Great Lakes regions and certain mountainous areas in the West. The service will begin on the next year. Under the legislation, no air routes providing certified airline routes are to be used. CAP is given 30 days to consider approval of the routes.

► **Pay Rises** for Aviation Officials—Legislation passed by the House and approved by the Senate Committee on Post Office and Civil Service would boost the maximum salaries of two government aviation officials, as follows: Secretary for Air, from \$16,000 to \$17,000; Chief Secretary for Air, from \$10,000 to \$10,500; Assistant Secretary for Air, from \$5,000 to \$5,500. The bill also raises the pay of the Chief of the Air Force, from \$12,000 to \$12,500; Chief of the Air Force, from \$11,000 to \$11,500; Director, NACA, \$10,000 to \$10,500. The Senate committee disapproved raising the Civil Aeronautics Administration's salary from \$12,000 to \$12,500 as recommended by the House.

Closed-Course Jet

Race at Cleveland

Closed-course jet racing in the United States will be revived by U.S. Air Force pilots from North American Super 17861 incorporating flight in the 1949 National Air Race to be held in Cleveland, Sept. 1-5.

A quartet of Solers will compete in the jet division of the Thompson Trophy Race sponsored by Thompson Products Corp. of Cleveland. The J-58A currently holds the world speed record at 670 mph. Last closed-course U.S. jet race was in 1947, but Thompson, when as USAF pilot, hit Lockheed Shooting Star (F-80) jet on a last-lap performance that caused structural damage to the planes' main engines, forcing landing up around the pylons turn.

► **New Course**—The Thompson Trophy course has been modified from four to seven pylons to decrease the steepness of the turns required. Lays will consist of 15 miles with the total race time from 180 to 225 mins. The first six have been among their latest jet fighters and experimental planes among a 70-mile course at other national events. The 1948 event was won by the B-104E letting 552 mph on one lap.

► **Other USAF jet racing will include:**
 • **Republic Thunderbolt (F-64)** in the jet division of the Bendix Cross-Country Race from Miami AFB to Cleveland, sponsored by Bendix Aviation Corp.
 • **Lockheed Shooting Star (F-80C)** in the Altair jet class between Cleveland and Indianapolis, sponsored by Altair, an arm division of the Lockheed Corp.
 New jet racing will include:

► **McDonnell Douglas (F-24C)** is a new four to five miles at an off New York to Cleveland, sponsored by the American Steel & Wire Corp. of Cleveland.
 • **Grumman Panther (F-96)** and Ben there in a jet-class race sponsored by Westinghouse Electric Corp.

► **Experimental**—Solers will be added to the pylon division of both the Thompson and Bendix races by a North Safford Mark 14 to be flown in the Thompson by an RCAF pilot and a Heinkel Heinkel to be flown by a British airline pilot at the Bendix.

► **Crosby-Bell**—Most of the old three jets are entered in the 1949 Thompson including Anton Johnson, 1948 winner with F-51, Coast Cleveland and Rich and Becker who finished seventh in 1947 with Goodyear F-2G Canavie, Ron Pickett, former Navy pilot, who also has an F-30, Charles Tipton, Northland leader in the 1948 event, and Henry Hays, NACA jet technician, with a speed F-39, and a jet

Odum to Race

New events entry in the Bendix Race from Rosemead Drive, Calif., in Cleveland, Sept. 3, in William Odum, second the world jet, sponsored by Jacqueline Cochran, jet son Bendix Race winner. Odum's last major entry in the closed-course race in that he will fly the newly published "The game" F-51 modified by J. D. Reed, of Houston, with wingtip radars, and purchased by Mrs. Pauline Reed for Odum to fly. The Bendix has been decided by Reed as the latest pre-war engine plane in the world

with F-51 modified by J. D. Reed of Houston, Tex., at a reported cost of \$100,000.

The Bendix pylon division will feature a new-line start from Belmont Lake in California that will provide a more interesting finish at Cleveland with the first plane over the line will be the winner.

► **Goodrich Change**—Goodrich Trophy course has been shortened from two miles to a mile and three-quarters with six pylons instead of five. Extra pylons will be located midway on the short sides of the course to provide better guidance on the turns. Staphausen will be 323 ft with 650 ft between the pylons at each end.

Frye Sues Northrop, Claims Raider Idea

Public controversy, over conception of the Northrop Raider was brought to light in the \$265,000 suit being brought by T. C. Frye, former Transcontinental Airlines pilot, against the Northrop Co., and Northrop Aircraft, Inc. (Aviation Week, Aug. 12).

The suit charges Galt and Northrop with failure to give Frye credit for conceiving the aircraft and neglect in paying him an alleged percentage royalty on manufacture of the plane.

► **Origin**—Frye claims that Galt came to him near the end of the war and asked him opinion on a transport craft which Northrop could build for postwar business. Frye and he outlined the characteristics of the Pioneer to Galt, who became interested, and he then proposed Galt with basic drawings of the craft. Northrop, however, in 1945, as an agent, called the Raider "an outgrowth of the Pioneer which Northrop

developed shortly after the end of the war."

The royalty agreement, Frye told AVIATION WEEK, was signed to be Galt when the latter was chairman of Northrop, and was for 1 percent on the first 60 serial numbers and 14 percent thereafter. It covered all aircraft except those manufactured for TWA and its affiliated companies.

► **Background**—Later, Frye claims, Galt did not think it was to be a royalty agreement, but a sales agreement, with the 1 percent commission to Frye, on Northrop Raiders (then the Pioneer) that he personally sold. Frye told AVIATION WEEK, "this was not true." He said he had previously refused an offer from Robert Gray, Lockheed Aircraft Corp. president, of \$1 million if Frye could sell 19 Corsairs there.

In the suit, Frye claims \$155,000 for lost royalties and \$100,000 for personal damage. USAF currently has 21 Raiders on order from Northrop.

Strikes Off

A two-year agreement that possibly will set a pattern for the entire industry has been signed between Lockheed Aircraft Corp. and International Union of Machinists Local 727. Lockheed still has to settle with 750 industrial workers, members of the aircraft chapter of the Engineers and Aircraftmen Union. IAMS last week was about to settle with the Douglas Stearman and F1 Stencils plants. Only Lockheed, UAW CIO locals still dualized with Douglas Long Beach plant and three North American plants, Inc., plans.

But, all in all, the end of the crippling strikes on the West Coast has been reached.

► **IAMS** Happy—Lockheed's 5-point proposal was accepted by IAMS while the latter agreed to accept Lockheed's new Waco "we've got a good contract, a contract we can live with, good for both the company and the union."

The contract 10-cent hourly increase in base pay, a 10-cent increase in overtime pay, 5-cent hourly increase effective Aug. 22, 5-cent per hour merit increase to be granted in 16 weeks by joint company-union review board. Production incentive plan. The contract was 15 cents hourly the new structural assemblies. From there included a 5-cent bonus in January's bonus to 15 cents hourly, unlimited accumulation of sick leave and seniority increases, and a 75 percent at Lockheed's personnel.

► **NAA, Tulsa** Delivered—North American-Dow Chemicals Inc. has reached a new agreement with the U.S. Coast Guard. The suit charges Galt and Northrop with failure to give Frye credit for conceiving the aircraft and neglect in paying him an alleged percentage royalty on manufacture of the plane.

FINANCIAL

Leverage Keynotes Airline Gains

Improved dependability pushes carriers past break-even point, enhancing gains. Tax credits aid upsurge.

Airline traffic and earnings have shown considerable recovery during the second quarter of this year to reveal a sharp downward trend in effect for the industry as a whole.

The magnitude of deficit results for the first quarter by second quarter opportunities and the rapid accumulation of earnings, have been most cheering to the industry and to investment spectators.

► **Leverage**—The striking comeback in a reflection of the working of the leverage phenomenon. Once a break-even point is reached, at least 90 percent of all subsequent returns generally flow through to net.

The stark operating history of United Air Lines clearly illustrates the impact effects of leverage on earnings. After a net loss of \$1,611,500 sustained by United in the first quarter, the company finished up a record-breaking net income of \$3,058,518 in the second quarter to reflect the loss, before tax adjustments, to \$152,962 at the airline's end.

This recovery amounts added eight cents a share (a rounded total) above \$2.3 million in operating losses were noted in the results of June alone.

What happened when leverage is set in motion during an upward trend in earnings is highlighted by a comparison of April and June operations as reported by United. During April, the company lost \$1,626,487, which contrasted revenue passenger miles with an average load factor of 60.6 percent. This was accounted for total passenger revenues of \$4,115,000 and a net operating profit of \$19,066 for that period. In June, the company flew a total of about 146 million revenue passenger miles at an average load factor of 81.5 percent, which led to total passenger revenues of \$5,145,000 and a net operating profit of \$2.3 million. In other words, while gross passenger revenues increased about 37 percent, the net operating profit soared more than 100 percent.

Based on preliminary estimates of July traffic, which is about 5 percent below that of June, net earnings were placed at around \$1 million. This factor illustrates the much wider fluctuation in net income at estimated with its gross revenues.

► **Deficits Shaken**—This recent upsurge

in earnings has not exceeded the best expectations of United's management. In November, 1948, President William A. Patterson declared that the company would be required to go out and raise \$10.5 million to one fund to complete its projected expansion program.

Aided by the airlines' mail payment awarded by the Civil Aeronautics Board in February, 1949, together with increased operating income, the management in May, 1949, showed that it would then need but \$2.5 million in additional financing to complete its previously contemplated expansion program. Now, thanks to recent earnings increases, United will manage to pay for its expanding equipment acquisition program without recourse to any financing.

An increase rate of leverage in operation is reflected in the return on equity reported by Northwest Airlines. This carrier had a net loss of \$757,474 for the year 1948 and a net profit of \$418,815 for the last half of 1948. However, this reversal really made itself felt in June when as a gross of about \$4 million, a net income in excess of \$1 million was realized.

TWA is demonstrating strong recuperative powers. For the first six months of this year, total operating revenues hit \$4,542,778 for the like 1948 period. In some specific terms, consolidated net income for the second quarter was \$1,121,185 as compared with \$458,272 for the like 1948 period. In some specific terms, consolidated net income for the second quarter was \$1,121,185 as compared with \$458,272 for the like 1948 period. In some specific terms, consolidated net income for the second quarter was \$1,121,185 as compared with \$458,272 for the like 1948 period.

► **Second Factors**—The excellent airline performance has been attributed to a series of factors which include improved safety, improved dependability of airlines, more intensive sales promotion, special traffic standards in the form of family plans, excursion fares and at such moments and increasing efficiency in the airlines to pick up declining sales trends.

The industry, however, was not so much buoyed up from accidents out of its own making. The series of accidents by irregular airlines and the false crash by a Navy plane, running as

Eastern Air Lines transport are disabbling to those who were on the verge of losing their first hope. It is this untapped under which the airlines seek to add to their growth lists.

► **Tan Coughlin**—Current fuel surcharges have also naturally helped by airlines. In other words, airlines were not required to pay any federal tax on recent earnings. These tax credits provided a cushion which permitted the carriers involved to retain the bulk of earnings despite losses.

► **American Airlines**—For example, which showed net income of \$1,775,150 for the second quarter, had to provide for only \$90,000 in federal income taxes. In other words, the airlines were able to apply the carry-forward provisions of the law to offset current income. For the most part, until 1948 losses. It is obvious, moreover, that for the rest of 1949, airlines will be freed of the pressure of paying the full federal tax of 35 percent.

Eastern Air Lines, which has been the most consistent in earnings among the carriers late, of course, have found the times to let in the light along. This carrier showed net income, after taxes, of \$550,289 for the second quarter of this year. Such earnings would have been materially higher were it not for the times to let in the light along. This carrier showed net income, after taxes, of \$550,289 for the second quarter of this year. Such earnings would have been materially higher were it not for the times to let in the light along.

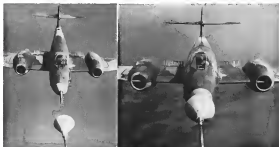
The leverage phenomenon will continue to impart substantial earnings if traffic is maintained at high levels. In other words, however, that the reduction of its traffic, in most instances, will take an approximate 30 percent loss out of all current earnings to be restored. This factor may prove decisive in determining the sharp consolidations of carriers which begin to appear during the second quarter.

► **Fixed-Cost Problem**—It is probable, however, that the industry's main concern is the fixed-cost problem in revenue. This condition was attributable for mounting deficits in the post-war transition period. Overturn on this profit margins, as the airlines' revenues can readily be diminished with a sharply falling traffic rate.

There is no answer to the fact that the falls of airline revenues costs are of a fixed nature and do not readily lend themselves to a diminished outflow in periods of decline because.

The reversal of the airline trend for the industry, as a whole, with the replacement of substantial earnings that is needed that can be a great event, adds back to the airlines' revenue. Certainly, such added revenues may permit the group to withstand in far better condition any declines that may develop in traffic levels.

—Sally Abelson



METEOR APPROACHES, probe about to . . . CONTACT with nose on hose trailed from tanker. After connection

Jet Fighter Refueled Via New Technique

Meteor pilot maneuvers nose probe into tanker hose cone for automatic connection. Breakaway simple.

By F. R. Brewster
(McGraw-Hill World News)

London—America's Air Force observers, as well as aviation officials here, are greatly impressed with the nose probe refueling technique demonstrated by British experimental jet-powered fighters.

Early this month, these experiments were in a dramatic climax when a Gloster Meteor was successfully refueled 13 times during a continuous 13-hour flight over England's south coast. The flight, incidentally, set a new endurance record for jet-powered aircraft.

Although distance of flight, and not endurance range, was the point being demonstrated, the mileage flown by the Meteor on its long run was equal to about 3600 mi. (computed at the average speed of 700 mph), as better than the distance from London to New York.

U. S. Observers Participate—Presently, the technique has been demonstrated to General Gurnell, of Air Materiel Command, Wright Field, and Col. David Schilling and Col. G. Hedley, of the U. S. Air Attack staff in

London, who the Meteor during dummy approaches. Their report (while obviously confidential) is understood to be quite commendatory.

In addition to those by the American Air Force, observers, "dry run" approaches by the Meteor have been flown by experts from RAF Fighter Command and from Bomber Command, the Ministry of Supply's (Fleet) Experimental Station, as well as Geoffrey Tyson, chief test pilot of Saunders-Roe Ltd. (maker of the S.R. A/1 jet-powered flying boat fighter).

Technique's Possibilities—Refueling of fighters in flight would mean, of course, greatly increased range on escort missions, accompanying long-range bombers. It might also permit fighters to remain aloft for much longer periods in defending against incoming bombers.

Possibilities of the technique for increasing the range of jet-powered fighters like the Comet, too, are obvious.

Up to the present time, however, the Air Ministry has not been seriously considering the use of in-flight refueling for RAF jet fighters. There appears to be a considerable opinion that such a measure would have very little pro-

trial value in a city cross-crowded with enemy fighters or thronged with enemy bombers.

Paras Underlying—The experiments on refueling jet fighters which culminated in the recent endurance-flight have been conducted wholly as a private venture by Flight Refueling Ltd., Sir Alan Cobham's organization, which has been a partner-and the chief ally in development on this field.

Two years ago this company carried out a long series of demonstrations of flight-refueling of civil transport planes over the North Atlantic—first with BSAA over the Azores, during the summer of 1947, later with BOAC west of Shannon and east of Gander.

This record longest power demonstration began in 1949 when Short flying boats of Imperial Airways were refueled over the North Atlantic by tankers based on Shannon, and with other demonstrations conducted over the Channel immediately after the war.

Endurance Flight—Duration of flight of the Meteor (a single-seat fighter powered by two Rolls-Royce Derwent turbojets) is normally considerably less than two hours. P. G. ("Pat") Harbridge took this particular Meteor aloft from Turney, Berkshire (about), over Beaconsfield at 5:20 a.m. and stayed there until 9:23 p.m.



FUEL IS TRANSFERRED at 300 gpm. Fighter slow-down was six feet below tanker wings, actually used, were impressive.

"It was a bit boring," he said. "I took a back along to stall, but the weather got so bad that I had to keep my eye on the instruments most of the time."

"I really got fed up about the end of the hour, and the sight of the tanker coming in to refuel me helped to relieve the monotony."

And that's how refueling a job it was. Ten times during the flight—roughly every 55 minutes—the Lancaster tanker, piloted by T. G. ("Tommy") Marks, of Flight Refueling Ltd. disconnected with the Meteor and gave it a fresh supply of fuel.

Contact Details—Refuelings took place about 6000 ft., with the two planes flying at 700 mph (the Meteor's top speed is close to 680 mph). The fighter's nose probe was fully extended to meet the pilot in maintaining full control at this speed.

Each contact took between 15 and 2 min. Altogether about 2500 gal of fuel (possibly, it's called here, in U. S. it's called kerosene) was transferred during the flight. The Lancaster tanker, assuming shift between refueling, had to land once to take on more fuel.

Last three hours of the flight were made during one in extremely poor visibility and the last two minutes were made in cloud. Flight Refueling Ltd. was prepared for this condition, too, and radio and radar contact was

maintained throughout. For the latter purpose, the company had developed a special adaptation of the radar transponder unit (Radar) of the British radio beacon system. This was carried on the fighter plane and enabled the tanker's crew to keep constant touch with the Meteor up to a minimum range of 100 mi. Hence, no danger was involved.

To verify the endurance—according to an official of the Royal Aero Club was present during the flight.

Technique Used—Previous British refueling in flight has involved transport planes, with the fuel being poured from tanker to receiver through a hose which was hauled along the receiver and coupled by hand into the receiver's fuel piping system. With transport planes, crew were available for this purpose.

But with a single-seat fighter, the process had to be made fully automatic and the coupling-up as simple as possible.

Flight Refueling Ltd. worked up special equipment for this operation, which can be seen clearly in the accompanying photographs.

The Lancaster tanker trails a short length of flexible rubber hose which has a metal cone fitted to the end.

The receiver fighter, which comes up close behind the tanker, carries a pencil-shaped probe below it, like a probe, in its nose.

Measuring some 15 ft. behind the tanker and just below its tail, the fighter pilot guides the probe forward into the cone-like a bee stinging up to reach the honey from a flower—contacting gently until it locks firmly in place.

Changing Mechanism—This results in a close-in engagement of three tangles reaching over an immense power in the probe. A forced thrust of 5 lb. (usually given by the fighter when making contact) is sufficient to seat these tangles and lock the nose firmly on the probe. A rubber ring on the nose's end seals the joint. Once made, the joint takes a 300-lb. pull to break.

For refueling fighters, the hose is trailed tail of fuel. (In the demonstration with transport planes in 1947 and 1948, the hose was empty until contact was made and coupling-up was completed.)

When this joint is complete, the fighter pilot (from his cockpit) operates a valve in the end of the probe which opens the channel to his fuel tanks, and at the same time opens a valve in the cone, thus completing the pipeline.

Fuel Transfer—The hose is reeled out from the belly of the tanker from a spring-loaded drum affording automatic take-up of any slack in the hose. After contact is made, the fighter pilot flies forward another four feet (total to see revolution of the drum). At this



REFUELING PROBE on Metra, now cowl removed, showing hose connection to tanks.

port, a green light flashes outward only in the meter's cockpit, signaling the refueling crew to switch on the fuel pumps.

While taking fuel, the fighter pilot keeps station in the tanker's cockpit, signaling the refueling crew to switch on the fuel pumps.

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While taking fuel, the fighter pilot keeps station in the tanker's cockpit, signaling the refueling crew to switch on the fuel pumps.

Wider Use Seen For Air Refueling

By Irving Stone

Fresh from successful British trials of air refueling, the Air Force is now scheduling a jet fighter, the Air Force is now scheduling a jet fighter, the Air Force is now scheduling a jet fighter.

It is and "I see it as refueling, a method which could be used in long flights of civil as well as military aircraft.

the data looked when two tanks left the place in a rocket on the down's way.

When the fighter plane falls back the fuel tank is empty and the fuel is back the fuel tank is empty.

In the present experiments, the hose was not finished. The expected time what from the procedure used in the tank over the North Atlantic, when the fuel tank is empty and the fuel is back the fuel tank is empty.

With perfect fuel, the danger of fire is less than with gasoline. The fuel is back the fuel tank is empty and the fuel is back the fuel tank is empty.

Elaborating on the application of the refueling method to military craft, Colburn said that members of U. S. military aircraft in the recent Meteor experiments "can handle most refueling work."

There at Chaco-He said that the technique could be used to refuel many aircraft in the future. The technique could be used to refuel many aircraft in the future.

Colburn doesn't believe a refueling agent is necessary to tap off the fueling system, and he feels that it is safer to refuel in a more than on the ground. He also pointed out that the two planes in a refueling on contact

Work is progressing on a system to allow refueling at 400 gpm, cutting down actual contact time between tanker and receiver.

Long conditions shift are no problem. Colburn explained that the much more in the tanker's hose was protected against freezing by a "hot" insulation.

Probes World War II's probe configurations as the Meteor's not contact period in a standard installation. It is said that would call for its own arrangement and probably very few would use the nose probe. It could be installed along the wings or fuselage.

Colburn told Aviation Week that contrary to some reports, the British Ministry of Supply "is very much enthralled" about the refueling technique, but they have a new harbor on which to apply the method. If any deficiency could be explained, it was the risk method of refueling as formerly used with transport. This procedure, with trailing hose from both refueling and receiver, was not both refueling and receiver.

"Flying Tanker"—the name, advantage of flight refueling for civil aircraft, he stated the present day large transport is a "flying tanker" which, incidentally, carries few passengers—a colossal plane with comparatively little payload.

Colburn felt that the danger today is to be refueling, because intermediate stops are hard to develop between landing, island, and various weather conditions. It is his opinion that the only way to make a refueling stop on the North Atlantic run is to have a large, frequent transport flight between New York and London. A number of small planes refueling the refueling technique, he says is the more feasible approach.

Colburn offered this example: "Let us present a transport flight between London and New York. After more than be made for a 1000, head wind, bad weather, time for refueling, a possible stop-up on the destination, and other circumstances. Assuming we want to carry 100 passengers it will be necessary that we build a system with a gross weight of 100,000 to 150,000 lb. About 30 percent of that weight will be gasoline and only 4 percent actual payload.

"However, if no plan is refueling that aircraft twice in flight, the all-up weight of refueling could be 150,000 lb. or less than half the weight of the unrefueled aircraft. It could be operated at one-third the cost and 3 are convinced, could be constructed at less than one-third the cost."

He is convinced that flight refueling will become commonplace in the next few years.

The American counterpart of the British experiments in flight refueling, Inc., located at Danbury, Conn.

The American counterpart of the British experiments in flight refueling, Inc., located at Danbury, Conn.

The American counterpart of the British experiments in flight refueling, Inc., located at Danbury, Conn.

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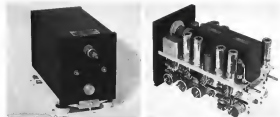
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Left photo shows Model 265 radio teletype printer terminal check mounted in pressurized case. Right photo: Internal making of unit

Lightweight Air-to-Ground Teletype Unit

New terminal is automatic, weighs only 15 lb, and is pressurized. Advantages seen over voice messages.

A teletype printer terminal, permitting air-to-ground control communication via radio, is being placed on the commercial market for the first time by Radio Frequency Laboratories, Inc., Blairstown, N. J.

The new terminal, Model 265, weighs only 15 lb with shock-mounted base, is pressurized for service up to 50,000 ft., and is completely automatic. It is a long way in weight from the 70 to 160 lb. units which have kept radio teletype tied to the ground as a special device in dual signaling. Back between Model 13 teletype signaling receiver printer (developed for Navy aircraft) and voice-modulated search radio receiver and transmitter.

The terminal simply is plugged to the radio headset and microphone jacks to provide automatic, ground-to-air communication from air to ground and vice versa. When voice communication is desired, the unit is disconnected, and the microphone and headset plugged back into radio.

Advantages Reported—According to the maker, the unit permits approved air-to-ground weather reporting and gives voice reliable communication than voice or code, since it eliminates possible mistakes of hearing or decoding.

In flight tests, it is reported to have operated successfully with a signal-to-noise ratio of more than 1:1. This means that printed communication was continued under conditions where voice would have been prohibited as greatly fainter.

The company believes another advantage

is that personnel can be more quickly trained to proficiently operate a teletypewriter than code key. It states that one of the many uses of the system by airlines would be a radio telegraph service to passengers aloft.

It also is pointed out that a demonstrated communications expert expressed the opinion to American Warrent that, taking all factors into consideration, teletype is a faster, more efficient communications medium than an overall operational standpoint than code.

The unit is supposed to be equally reliable for mobile service on the ground, or for fixed-base operations where large printers of the page, type or perforator type are used.

The Air Force reportedly has experimented with the terminal for weather service in Alaska, and the Navy has put it through operational tests on the Eastern Seaboard.

Operational Details—The terminal operates on audio frequencies of 500 and 700 cycles respectively. For transmitting a printed message, it converts electrical impulses from the printed into the two frequencies for modulation of the transmitter.

In receiving, it converts the two frequencies coming from the receiver into tuned and speed electrical impulses required to operate the printer.

Special tape and circuit controls automatically switch from "transmit" to "receive" four seconds after the operator takes his hands off the teletype keyboard. This time lapse is provided in the event operator momentarily pauses

while sending a message.

The terminal automatically switches from "transmit" to "receive" the instant the printer keyboard is touched—provided no message is coming in.

General Features—The terminal search unit is contained in a pressurized aluminum case sealed at both ends by gaskets. On one end (shown) is a cap for removal of moisture trapped in side the unit during storage. The other end mounts a flag having 15 cm sections.

Internal mechanical design and construction conform to AN specifications. Electrical parts such as filters, transformers, relays, switches, etc., are all hermetically sealed. Dimensions of the device are 5 1/2 x 6 1/2 x 10 1/2 in.

The company states that the unit can be used in conjunction with other 500 and 700 cycle, and reports that it already has another unit of the same weight for 2275 and 2475 cycles.

First radio teletype terminal for air use to be successfully produced by Radio Frequency Laboratories was a 27 lb. model developed for the Navy in 1946. A 32 lb. unit soon followed, but the company did not place its product on the general market until the present 15 lb. model was developed.

Engineers Develop Fog-Making Device

A tank which manufacturers for under controlled laboratory conditions has been developed at the University of California.

Engineers believe that research with



what UNITED AIR LINES

says about

SKYDROL

in supercharger service

"Our service testing of Monsanto Skydrol has demonstrated its superior qualities as a fire-resistant hydraulic fluid for DC-6 cabin superchargers. We consider the development of Skydrol an important safety step in aviation."

W. C. Hunter
General Manager Engineering



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SKYDROL carries CAA approval as the hydraulic fluid for cabin superchargers on DC-4-type aircraft.

SKYDROL is fire-resistant—meets the non-flammability requirements of Aeronautical Manual Specification 3730.

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SKYDROL is stable at generally required operating temperatures and pressures.

SKYDROL is non-corrosive to aircraft metals and alloys.

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the war eventually will lead to knowledge of how to prevent or dispose of an aircraft. They are working on the theory that says the source and mass of fog fog must be determined before they can be isolated. The task was designed when actual fog was found to obscure for research purposes.

■ **Isolate Nations-like fog machine** is designed to produce air pressure and temperature changes corresponding to natural processes which result in various conditions, advection, and pressure types of fog. It is essentially a double-walled container, equipped with windows for observation and photography, into which cold or warm moist air can be introduced from a connecting vapor cell.

The air can be cooled or heated by circulation of warm or cold water in the tank jacket. Advection fog, for example, can be generated by sudden mixing of warm saturated air from the vapor cell with a cool air mass in the fog tank. Pressure can be alternated by closing or opening an outlet valve while maintaining the supply from the vapor tank. For "icing" studies, smoke or dust particles can be introduced from a connected container equipped with a blower.

■ **Can Forecast Fog Studies**—According to D. M. French, project supervisor, son life is known about the actual physical characteristics of fog. Now that scientific artificial production has been achieved, photomicroscopic and other techniques can be used to gather accurate data on particle size, density, water content, temperature, dust content, composition, etc.

While the ultimate objective of the project is fog dispersal, French points out that knowledge gained from these studies will have valuable applications in other fields. One relay key is observation of objects with a fog screen.

Accurate measurement of light transmission from headlights, aircraft beacons, railroad and highway signals can be made.

The project was begun in 1945 with Navy funds which were discontinued at the end of the war. Research now is sponsored by the University's Institute of Transportation and Traffic Engineering.

ENGINEERING FORUM

Ailerons, Too!

Apparently the Russians can't even keep their jets straight. In the July 29 issue of USSR Information Bulletin, says Maj. Gen. Yurak Morozov responds to the claim of a thing of one Alexander Mozhaysky in 1932 and credits him with invention of the aileron in 1937. Thirty years ahead of Fieseler, who is credited

with great credit for it? (With thanks to Gen. Gorbunov please note) But then the General tries himself up by offering: "The function of ailerons is to give an upward and downward curve to the machine."

And speaking of Mozhaysky reminds us of a drawing of his supposed 1932 machine, standing respectfully poised for its first flight, with wings raised from each upper surface in a prism shape. The ailerons, but no left wing under surface. Perhaps the Russians are too modest to admit the earliest use of wing computers—RML.

Slipstick Slip?

Concerning the remarks of H. C. M. in the Aug. 1 Engineering Forum, per taining to the fact concerning the of the tape, after the war, one can tell us "it was slipped up in the line parts," Mr. Mellanese or H. C. M.?

According to our calculations, the only way we can get H. C. M.'s answer is to take a most an engineering approach and apply to convert losses in gallons.

L. H. C.

For Data Exchange

What's happened to the technical writing output of engineers in the Industry? There was a time when you could thumb through the pages of an widely circulated articles periodicals and take your choice of articles on which were the names of personnel representing the growth of aircraft construction and aeronautics.

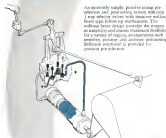
It's a sad commentary on the pulp we take in our aeronautical accomplishments when the host of engineers connected with our improving force of air frame manufacturers engine and equipment builders research organizations and others in the field apparently don't think their endeavors are worth telling about. Or could it be because of a sense of insignificance?

Profoundly, an engineer won't write unless he gets the good from his own pen, and it would seem that the latter is drifting down on the job if it doesn't encourage its personnel in public achievement, when this is possible. No company's engineers leave as much that they have no need for knowledge of what their counterparts in other companies are doing—and how they are doing it.

Let's have a continuing interchange of data and methods while these can be of mutual value to engineers—and when this information is shared in time.

T. E. S.

ADEL POSITION CONTROL 4-WAY SELECTOR VALVES



An extremely simple, positive means for selection and positioning remote working 1 way selector valves with incompressible fluids. The working lever directly provides the required incompressible and constant stream flowability for a variety of hydraulic arrangements with positive pressure and constant flow working. Self-contained control is provided for positive pressure selection.

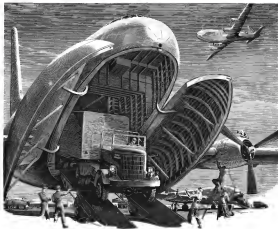


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How Douglas is helping to meet the GROWING CRISIS IN AIR TRANSPORT

Military strategists fully recognize the vital role that air transport will play in future operations.

They realize that tomorrow's transports must be larger, faster, more versatile.

That is why the Air Force has ordered a fleet of new type cargo planes—the Douglas C-124A.

- **Carrying 58 feet above the ground,** this giant transport will fly back up to 50,000 ft., a distance of 1,200 miles and return to base without refueling.

- **Reversible propellers and wing-length brake flaps** will enable the C-124A to take off and land from nonstandard air fields.

- **Unique clamshell loading doors and self-contained ramp make it the only transport where heavy field equipment can drive directly on or off the plane.**

Beyond to support and supply global operations, the C-124A, unique in the post-war country Douglas tradition of building dependable aircraft always ready whenever the job, wherever the mission.

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AIR TRANSPORT



MANGHA MARATHION's outboard propeller engines are deployed above otherwise very quiet engine nacelles. Installation apparently was dictated by wings being too thin to embed the propellers. Third Mangha Marathion flies by. It must Mangha Marathion is smaller than ...



ARMSTRONG WHITWORTH 31 passenger Apollo with four Mangha. Gross weight of the passenger craft is 39,500 lb. and it is designed to cruise at 305 mph at 20,000 ft. Total freight capacity is given as 410 cu. ft.

U. S. Airlines to Buy British?

Sen. Johnson tells of plan to purchase foreign craft; hints American complicity in jet-transport design.

Great Britain's energetic wide-body campaign to sell its new jet and turbo-prop transports is strengthening impression held that U. S. plane manufacturers and military officials are too complacent over the foreign threat to American leadership in commercial aviation.

Senator Edward Johnson (D., Calif.), chairman of the Senate Interstate and Foreign Commerce Committee, last week told AVIATION WEEK he had been advised that "several U. S. airline executives have arranged to purchase British jet transports during the next three years." He said developments in the British jet field call for prompt and decisive action by the U. S.

► **Three-Year Lead**—Once the world

air routes are taken over by striking blue countries with their lower wages it will be difficult for American carriers to compete successfully without successful government subsidies," Johnson warned. "It is in the three-year lead the British have gained while we have wasted time and pondered the economic efficiency of jets that may lose this country's preeminence in civil air transport."

"The longer we wait to develop new transport designs the harder it will be to overcome the British advantage."

On the long international routes, high-speed jet transports will certainly capture the world's air trade as soon as they are technically and economic-

ally feasible, Johnson continued. "The U. S. has the basic scientific knowledge coupled with extensive experience with jet engines in military aircraft, but there is no substitute for applying this scientific knowledge in the construction of commercial transports of advanced design."

► **Military Program Scupper**—The answer said he was at a loss to understand the reluctance of military authorities to press for a positive program to meet their transport requirements as determined by the Joint Chiefs of Staff. He noted that loss of commercial sales would make domestic plane builders all the more dependent on day-by-day support of the military "which does not permit the aircraft manufacturing industry to collapse."

Johnson recalled that due to neglect and lack of planning the U. S. Merchant Marine was in deplorable condition prior to World War II. He predicted that without the ability to compete on equal terms with foreign carriers our international air fleet will deteriorate similarly.

► **Contingencying**—He was "three or four years behind" in the military, not in the civilian, but the military cannot again allow itself to be taken over by the planes of U. S. airlines, warning of disruption of mobilization and production," Johnson declared. "Working the defense is a national emergency by considering 75-80 percent of their planes would be an act of desperation."

The Commerce Committee chairman wants the National Military Establishment to estimate the number of aircraft of a type suitable for com-

aircraft use that would be required by the aircraft owners on May 4. A way should be found, the senator decided, to develop a fleet of supersonic aircraft operated by the airlines which could be converted instantaneously to military use in wartime without draining the commercial air transportation system.

► **Manufacturing** Problems—Johnson thinks the railway shows some lack of understanding regarding the proposed aircraft prototype program, that he is equally concerned over the lack of interest by U.S. plane builders in the development of advanced transport vehicles for freight, medium range and longhaul operations.

"Manufacturers have spent huge sums designing and building up for present models, and they do not want to go to a new design until they have recovered their heavy investment."

► **British Submarine Fleet**—The sea will not be quiet without the presence of the British nuclear submarine fleet. The British House of Commons said that "Australia will replace her present American conventional aircraft with British jet air landers within five years." The U.S. Senate, added added pointedly that the shift to British jets "at which a wide selection will be available" would result in substantial dollar savings.

Previously, CAA administrator Delos W. Reardon in testimony before Johnson's committee asserted that British helicopter transports such as

the Vickers Armstrong Viscount, Air Strang Whitworth Apollo and Handley Page Merula Mission would find favor among foreign buyers because they are brought with possibly as much of dollar as dollar.

Reardon compared the helicopter with the Conquest Laser and Martin 202. He said that besides the dollar factor and certain obvious performance advantages the British ships are almost completely identical in (excluding long maintenance costs).

"That I do not believe British helicopter transports will find a ready market in the United States, nor do I believe production capacity will permit export of these aircraft from Britain before 1955 to early 1957," Reardon testified. "Although no price has been fixed for these planes, they are expected to sell for between \$500,000 and \$550,000 per unit, exclusive of complete armament."

This is about one third more than the average sales price of the Conquest Laser or Martin 202 to day.

► **U.S. Position Examined**—Reardon told the Senate committee that "as in this country here, of course, we do not wish to export the Conquest Laser or Martin 202 to day." The U.S. aircraft manufacturer is engaged in actual construction of a jet or helicopter transport intended possibly for civil air transport operations. He noted that since U.S. companies are engaged in making design studies of such planes.

"As present," Reardon declared, "We are advised that Consolidated Vultee

has done some work toward installation of helicopter engines in its Conquest Laser and that Lockheed is making studies of possible installation of turbo-prop engines in its V-1000 transport aircraft, which was built for the Navy.

► **Military Flies Eased**—"Some of the aircraft being produced by the armed services may have potential civil use," says Reardon. "The V-1000, for example, which was designed in accordance with the transport category requirements of Civil Air Regulations Part 4. Another is the turboprop Navy patrol boat, the P-3V, now being completed by Consolidated Vultee."

"Nothing has a jet-powered version of the P-3V which is in use and is in use with a 10,000-hp engine and 10,000-hp engine."

The CAA official said aircraft transport have increased it will take about five to eight years from the letting of the contract to production of a fully armed and equipped, certified jet-powered transport for civil use. He noted that CAA already has certified for engine use two transport engines, one manufactured by Allison and the other by Pratt & Whitney.

Prop Reversal Causes NEA Clash

Legislation last week, studying sales passport reversal controls as a result of a Northeast Airlines flight peoples reversal, the third such instance reported by airlines in recent months, but the first with serious results.

An NEA Conquest Laser crashed on the runway at Portland, Me., Municipal Airport and was destroyed, but without loss of life or other passengers or crew. Previous sales passport reversal incidents have occurred to an American Airlines Conquest Laser and a United Air Lines DC-6 (Astroroute Wars, June 4, June 15) (reporters of two different manufacturers have been involved).

Prop recent on the NEA plane occurred when it was about 15-20 feet off the ground approaching for a landing. It crashed and burned, but investigators reportedly found that the Garuda levels were in the normal service position, indicating that the propellers performed properly.

Preliminary indications last week were that the NEA event, like the other accidents, could be traced to maintenance of the engine locking device, rather than the propeller system itself.

► **Service Failure** of the locking mechanism on the control quadrant would be a serious problem for airlines to pull the throttles all the way back into reverse when throttling back for a landing. The aircraft-dependent locks are designed to stop the throttle from

moving into reverse while the plane is in flight.

When the plane touches the ground, the locks move out of the way, permitting the throttles to be moved freely into the reverse position. Locks not so timely actuated by a microswitch event which is closed by the telescoping action of the landing gear struts close.

► **AA Cargo-Air** found that prop reversal in its craft was caused by a sliding, released lock. The plunger in the manual was bent and would not move up to block throttle movement. UAL's malfunction was caused by a missing stud which prevented the landing gear-actuated microswitch to close in flight and electrically open the released lock on the quadrant.

On the basis of these two minor accidents, observers feel that since the lock mechanism fails it is very easy for the pilot accidentally to reverse the prop. On the Boeing Stratocruiser, the pilot still has to be advised visually to travel into reverse, in an added precaution against accidental reversal.

Service-Subsidy Bill Unlikely to Pass

Chances for enactment this year of legislation inspiring separation of "free" and "paid" fares are not bright, say some, say Sen. Edwin Johnson (D, Colo.) will push for Senate passage before Congress goes home.

Last week, Johnson, chairman of the Senate Interstate and Foreign Commerce Committee, introduced a bill.

Endorsed by the Commerce Department and the Budget Bureau, after stating the President, it drafts CAA to make a study leading to the establishment of "service" and "paid" fares for routes in the domestic and overseas systems.

► **Effective Next Year**—The study would become effective in 1959, as if the Board study is not completed by then, would be retroactive to that date. CAA has vigorously opposed the setting of an effective date.

After hearings, CAA would establish subsidy payments necessary to routes routes vital to the commerce and national defense. These payments would be made from funds appropriated to the Board, instead of from Post Office funds.

CAA is devoted to study the "flexibility and modern" of establishing by law the principle that U.S. international current service may at the present time paid for by U.S. taxpayers for similar service, plus a subsidy to compensate for differences in wage rates and safety standards and "additional subsidies where required in the national interest."

IATA Reaches 30

Severely injured members of the line attended Air Transport Association week marked the 30th anniversary of IATA by carrying on routine operations even while this hall a million miles of routes, according to Sir William P. Hildred, director general.

Hildred noted annual passenger load increase on world airlines of from 3500 to 28 million, and an increase in routes flown of from 500,000 to 1 billion, within the past 30 years.

Between 1919 and 1949, Hildred said, air transport speed and reliability has tripled, an safety quotient has been multiplied by 25, and in the end the public has been met by more flights.

TWA Faces Ouster From Fairfax Base

Am Fares has indicated it will not use its Fairfax, World Airlines' base at Fairfax, Airport, Kansas City, where the service with 45 employees, now has overhaul facilities and some hangar space.

TWA along with the U.S. Chamber of Commerce and representatives of Kansas City, Kans., and Kansas City, Mo., are fighting the move which would make Fairfax an Air Bourse training base.

John A. Collins, TWA vice president-general, threatens the carriers annual payroll in Kansas City is \$21 million. Company purchases about 56 million gallons of fuel oil annually, says the airline, if it goes into effect will cause reducing personnel to less than 180. It will also mean TWA "loses a lot of low-cost, because many employees, who are settled in Kansas City and like a home, will not stay."

The carrier would also be faced with the problem of finding another location as ideal to its work as Kansas City. Collins says TWA's subsidiaries considerable assets for growth and development and increased maintenance at the base, in addition to routine in planes for over half an active passenger base.

An passenger service near Kansas City would not be a first for the airline. TWA would continue to keep it as a passenger base.

Colonial Files Suit To Stop TCA

Colonial Airlines has sought the aid of the federal courts in its fight to get out of the New York City area from under a competitor. Montreal-New York route.

In a suit filed in Washington five months, Colonial requested the quashing of the federal air carrier per-

mit actions of the Civil Aeronautics Act, charged that the U.S. Civilian air transport agreement concluded last June 1947, and under that provision of the U.S. statute to TCA, included the sub-lease laws. The American carrier and its related property rights in the New York-Montreal route are being taken away without the consent of law by virtue of a conspiracy by CAA members.

► **Domestic Fares**—CAA member Russell B. Adams heard the U.S. Aeronautics which suggested the agreement giving Canada rights to designate a carrier to operate the Montreal-New York route and other links. Colonial's president, Segurado Juez, has and the past would mean diversion of \$1 million in revenue from Canadian carriers.

The Colonial suit describes government-owned TCA as an "illegal monopoly" controlled by Canadian National Railway.

Family Fare

United Air Lines, American Airlines and other domestic carriers offering the family fare will have to pay more to extend it to May 31, 1959. The fare is now due to expire Sept. 30.

In announcing that it would ask the Civil Aeronautics Board for an extension, UAL reported that 48,000 families have taken advantage of its special group rates in the past eight months. Under the plan the head of a family, paying full fare, can take his wife and children on flights at half-fare on the Monday-Tuesday or Wednesday or Thursday when the flight is normally full.

Capital's Coach Guns Trim Mail Pay Need

An coach has earned a minimum average net profit of \$300,000 monthly for Capital Airlines since the low-cost service was introduced last November, according to president J. H. Chisholm.

Replying to statements that low-cost airline service is economically sound, Chisholm told the Civil Aeronautics Board and the Senate Interstate and Foreign Commerce Committee that the operation was a money-maker both as an added cost and fully allocated cost basis. The all-in-flight flights are definitely reducing CAA's dependence on mail pay, Chisholm declared.

The \$300,000 monthly net coach profit was shown after the union about half full share of all costs, Capital explained. On an added cost basis, the average coach profit is about \$115,000.

► **Traffic Anecdotes**—Between Nov. 4, 1948, and July 31, 1949, Capital carried 85,823 coach passengers, 44,235,000 revenue passenger miles with an average load factor of 75 percent. During this



SPANISH SPOKEN HERE

New motel office for Pan American Airways' Spanish-speaking business travelers is located in the heart of New York's Puerto Rican district, in the Bronx. Opened last week, and staffed by Spanish-speaking reservation agents, the office accounts for the largest

part of N.Y. Puerto Rican business travelers was dropped by PAA's Puerto Rican office in charge of decreasing travel time and saving money for the airline. Spanish managers in Miami, California. Wireless displays advertise PAA's 375 fare to the island.

nine-month period, the carrier grossed \$1,752,488 from the cabotage passenger services.

Cargo receipts (imports and freight) aggregated \$47,777, bringing total revenues to \$1,819,265. Overall expense as a fully allocated cost basis was \$1,564,315.

Included in the expense was about \$300,000 worth of advertising, from which the company derived benefits far beyond its application to strictly cargo services. But even with this promotional cost burden, Capital reported \$125,370 net profit during the first nine months of its for-profit trade operations, with out any assistance from public aid.

► **Added Cost Results—Caracas** pointed out that first-class Capital not operated any coach services it would still have had the increasing expense of ticket offices, salaries and wages of employees, depreciation, etc. "Admittedly, we have had additional cost items such as news, position, advertising and a few more personnel, but considering our expense in the light of the added expense we have under a \$1,342,661 profit on coach operations (8115,000 a month).

Capital claims that even on a fully allocated cost basis it has shown a net profit on coach services every month except November, 1968. In June, it earned \$45,715 on its allocated cost

base. Since the company's operating profit for the first half of 1969 was \$145,000, its coach apparently was a major factor in turning profits in the first half.

► **Not Pay Out—High level factors** on coach have cause Capital's overall loss factor and reduced its staff pay rate even has a strong case made for which Capital the passenger had been accused.

Lamarche estimated that only those to five million people bought the 14 million tickets sold by the domestic airlines last year. He and these five million people are a million plus segment of the 150 million U.S. population and demonstrate what actually is wrong with the unions—failure to act as the masses.

A recent CAB survey showed that 18.5 percent of the company's air coach passengers were making their first coast-to-coast flight, and that of these "first timers" 86 percent said they would not have used regular air service if coach had not been available.

Two More Nonskeds Under Official Fire

Nonscheduled operators are continuing to feel the weight of the Civil Aeronautics Board's "big stick" for allegedly flying more frequently and regularly than the law allows.

The Board has ordered Mt. McKinley Airways, Anchorage, Alaska, to show cause why its letter of agreement as a large irregular carrier should not be rescinded for "knowing and willful violations of the Civil Aeronautics Act flouted by Jack Seavey, Jr., Mt. McKinley is one of the best known nonscheduled passenger and cargo carriers on the Alaska Seattle route.

CAB originally instituted enforcement proceedings against Mt. McKinley over a year ago. In April of this year, the company was ordered to come and defend before operating its DC-8s to regular service between Seattle and Anchorage. The Board alleges that Mt. McKinley has continued to fly the U.S. Alaska route regularly since last April's order.

► **Florida Carrier Hit—Moonlight**, a CAB examiner has recommended that the Board issue a cease and desist order against American Air Transport and Flight School, Moon Springs, Fla. The company is accused of operating regular flights between New York, Miami and San Juan, Puerto Rico, in violation of the nonscheduled exemption, and of operating lanes less than that specified in tariff filed with the Board.

The examiner accused AAT's conduct that CAB's lacked economic jurisdiction over the company's operations.

laws because they were not in common carriage. AAT argued that it did not offer its services to the public but rather to its travel agency who, as independent contractors, issued the carrier's planes.

Other developments in the nonscheduled field:

► **Associated Airways, Burbank, Calif.**, formerly Airline Charter by Newco, was cleared to start West Coast to Hawaii flights this month with one-way fare of \$109 and \$109 roundtrip. DC-8s and crews are supplied by The Flying Tug Line. Confirmed company charge \$100 one-way and \$208 roundtrip. As other nonscheduled, Airline Transport Carriers, Burbank, has proposed a 599 West Coast-Hawaii fare.

► **Arrow Airlines** has initiated telephone equipment as its transcontinental DC-4 flights.

► **Transoceanic Air Lines** recently flew back to San Francisco and Seattle the 1280 salmon fishermen it carried to Alaska during 1968.

► **Robin Airways** has resumed the frequency of its out-of-state interstate Oakland-Los Angeles flights to four round-trips daily. California Arrow, another nonscheduled carrier, has resumed its Sacramento-Oakland-Los Angeles DC-3 service.

New Fare Structure Proposed by NWA

A major new three-level passenger fare structure, based on type of equipment used and service rendered, has been proposed by Northwest Airlines.

The four-cent-to-one rate for each service and aircraft rate for Northwest Airlines would be constant. But tickets on regular DC-4 and Martin 202-1 schedules would be only five cents a mile, compared to the present six cents.

► **October Target Date—NWA** plans to apply formally to CAB for the new fare structure on Sept. 1. Effective date of the tariff—if the Board approves—would be Oct. 1. Actual service at the proposed rates would start Oct. 15.

Under the tariff, Northwest Airlines' service fare between New York and Seattle would be \$17.85, Martin 202-1 and DC-4 rate would be \$31.85, and coach tickets \$97. The three fare levels would be lowest at class one, two and three, respectively.

► **Passenger Expected—Standard** (first two) fares at about five cents a mile would be about 17 percent lower than the present five level of the air transport industry.

NWA President Carl Hester outlined his three-class passenger service plan in his annual report to stockholders several months ago (AVIATION WEEK Aug. 25). His plan diversified operations to meet the needs of air-

line because they were not in common carriage. AAT argued that it did not offer its services to the public but rather to its travel agency who, as independent contractors, issued the carrier's planes.

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► **October Target Date—NWA** plans to apply formally to CAB for the new fare structure on Sept. 1. Effective date of the tariff—if the Board approves—would be Oct. 1. Actual service at the proposed rates would start Oct. 15.

Under the tariff, Northwest Airlines' service fare between New York and Seattle would be \$17.85, Martin 202-1 and DC-4 rate would be \$31.85, and coach tickets \$97. The three fare levels would be lowest at class one, two and three, respectively.

NWA President Carl Hester outlined his three-class passenger service plan in his annual report to stockholders several months ago (AVIATION WEEK Aug. 25). His plan diversified operations to meet the needs of air-

line because they were not in common carriage. AAT argued that it did not offer its services to the public but rather to its travel agency who, as independent contractors, issued the carrier's planes.

Other developments in the nonscheduled field:

► **Associated Airways, Burbank, Calif.**, formerly Airline Charter by Newco, was cleared to start West Coast to Hawaii flights this month with one-way fare of \$109 and \$109 roundtrip. DC-8s and crews are supplied by The Flying Tug Line. Confirmed company charge \$100 one-way and \$208 roundtrip. As other nonscheduled, Airline Transport Carriers, Burbank, has proposed a 599 West Coast-Hawaii fare.

► **Arrow Airlines** has initiated telephone equipment as its transcontinental DC-4 flights.

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► **Arrow Airlines** has initiated telephone equipment as its transcontinental DC-4 flights.

SHORTLINES

► **China National Aviation Corp.—Recently suspended all operations after the Hong Kong government requisitioned its**



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WHAT'S NEW

Trade Literature

"Current Market Report," prepared by American Wire Magazine, an 11-page publication round for the industry, available on request to Research Department, AVIATION WEEK, 130 West 67 St., New York 33, N. Y.

"Field Tests of an OHScheduled Distance Computer," by Francis J. Glass and Hugh Kins, Radio Development division, CAA, available on request to Civil Aeronautics Administration, Washington 25, D. C.

"Catalog 13," a listing of modern instruments for plant and laboratory, available on request to H-R Instrument Co., 2615 Trenton Ave., Philadelphia 23.

"Improvements in Cyclic Path Transmitters," by C. H. Jackson, Radio Development division, CAA, available on request to Civil Aeronautics Administration, Washington 25, D. C.

Belfer, describing a portable quality control generator, available on request to Elson Testite Laboratories, Inc., 420 LaSalle St., Chicago 10.

Catalog, covering pressure regulators, is available on request to Air Reduction, 68 East 42 St., New York 17.

Books In Preparation

(For more information about the following books, address inquiries to McGraw-Hill Book Co., Inc., 315 West 42 St., New York 36.)

"Soprano: The Autobiography of an Air Craftsman," by Eugene E. Wilson, winter publication by Whitteley House, 133 W. 42 St., New York 33.

"Air Transportation: Traffic and Management," by Thomas Wolfe, winter publication.

"The Theory and Design of Gas Turbines and Jet Engines," by E. T. Van Cort.

"Aviation Handbook for Aeronautical Engineers," by Leslie E. Needles, Institute of the Aeronautical Sciences.

"Seronomic Aerodynamics," by F. R. C. Miles, Johns Hopkins University.

"Principles of Aerodynamics," by J. H. Dornell, University of Wisconsin, October publication.

"Fundamentals of Supersonic Aerodynamics," by E. Arthur Bryson, Johns Hopkins University, November publication.

"The Airline and Its People (1946-1947)," by C. H. Claffield, C. F. Taylor and S. Oden, Massachusetts Institute of Technology, August publication.

"Theory of Wing Sections," by H. M. Abbott and A. E. von Dornhoff, August publication.

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